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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/974,668	10/10/2001	Kazuya Sayanagi	P/1071-1451	7481

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EXAMINER

JONES, STEPHEN E

ART UNIT PAPER NUMBER

2817

DATE MAILED: 12/30/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/974,668	SAYANAGI ET AL.	
	Examiner	Art Unit	
	Stephen E. Jones	2817	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 9/22/03 has been entered.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art Fig. 11 (and its description on pages 1-3 of the present specification) in view of Warneke et al. (of record).

The admitted prior art Fig. 11 teaches a high frequency circuit board including that surge voltage (i.e. a high frequency) is a problem with the admitted prior art Fig. 11 structure which is an electronic apparatus including all of the features of the claimed invention (including Claims 6 and 8-9) except: that the terminal electrode (5b) and the high frequency signal terminal are connected to ground for conducting direct current (Claims 1-3 and 10); that the passive impedance circuit device (i.e. the filter structure) is formed of a dielectric substrate having a higher dielectric constant than the semiconductor and circuit board (Claim 4); that the semiconductor and passive impedance device are bump mounted (Claims 5 and 11); that a cover is provided on the circuit board and the terminal is disposed external to the cover (Claim 7); that the passive impedance circuit is connected after the semiconductor device (Claim 12); or that the passive impedance circuit device is connected to the ground before the high frequency signal terminal is connected to the other terminal of the passive circuit (Claim 13). The admitted prior art also does not teach that a semiconductor terminal electrode (8b) is not a high frequency terminal (i.e. does not receive or transmit a surge voltage).

Warneke et al. (Fig. 2) teaches a MEMS switch filter circuit including a stub (26) which is connected to ground through a via hole (30). Warneke further describes that the filter stubs block particular selected frequencies from being passed on the

transmission line (12) (i.e. each individual stub is set/tuned at an electrical length so as to resonate at a chosen unwanted frequency which in the case of a stub having a via to ground would short circuit the chosen unwanted frequency to ground through the via).

It would have been considered obvious to one of ordinary skill in the art to have substituted the filter structure taught by Warneke et al. in place of the filter in the admitted prior art Fig. 11, because it would have provided the advantageous benefit of the capability of blocking many selected frequencies (see Warneke Col. 4, lines 36-38), thereby suggesting the obviousness of such a modification. Also, note that the via can be considered capable of conducting direct current since it is a continuous connection (i.e. in a DC manner having no blocking capacitors or equivalent).

Furthermore, it would have been considered obvious to one of ordinary skill in the art to have selected a stub in the combination of the admitted prior art and Warneke to have been set at an electrical length such that it resonates at a surge voltage frequency, because it would have been a mere selection of the unwanted frequencies (such as suggested by Warneke) that are desired to be attenuated and surge voltage is suggested by the prior art as a well-known unwanted high frequency, thus as a consequence of the combination of the admitted prior art and Warneke the high frequency surge voltage would be attenuated through the via to ground of the stub rather than through the semiconductor and terminal 8b in the same manner as the present invention.

Also, the admitted prior art teaches that the circuit board has a low dielectric constant as compared to the semiconductor of GaAs and the passive device substrate (see page1, lines 10-13 of the present specification), and Warneke teaches that the filter substrate can be ceramic (see Col. 5, lines 5-8). Thus it would have been considered obvious to one of ordinary skill in the art to have chosen the Warneke filter substrate to have been ceramic in the combination of the admitted prior art and Warneke, because it would have been a mere selection of art recognized equivalent substrate materials for the filter device as suggested by Warneke, which as a result would have provided a filter substrate having a dielectric constant that is higher than the circuit board and semiconductor device since it is well-known that the dielectric constant of ceramic is higher than GaAs, and the admitted prior art teaches that the circuit board dielectric constant should be comparatively low.

Furthermore it would have been considered obvious to one of ordinary skill in the art to have bump-mounted the semiconductor and passive devices instead of surface mounting, because bump-mounting is a well-known art recognized equivalent means for mounting devices on a circuit board to provide RF connections between components.

Additionally, it would have been considered obvious to have provided a cover over the components on the top of the circuit board, because it is well-known to provide covers for providing electrical isolation for circuitry, and thus the circuit would have resulted in a covered structure having only the terminal electrode (for input/output) and ground on the bottom of the circuit board exposed to the outside of the cover.

Finally regarding Claims 12-13, it would have been considered a mere design choice as to which components are mounted first in a particular order of assembly, especially since there does not appear to be any criticality to the order of the mounting of the components of the circuits.

Response to Arguments

Applicant's arguments filed 9/22/03 have been fully considered but they are not persuasive.

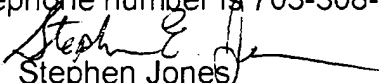
Applicant argues that there is no suggestion in the admitted prior art or Warneke to have the terminal 8b as a non-high frequency signal terminal.

Applicant's argument is not convincing because the combination of the admitted prior art and Warneke results in the same structure as the presently claimed invention. Warneke teaches attenuating unwanted frequencies through stubs through vias to ground and the admitted prior art teaches that high frequency surge voltage is an unwanted frequency thus suggesting the combination as detailed in the rejections.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen E. Jones whose telephone number is 571-272-1762. The examiner can normally be reached on Monday through Friday from 8 AM to 4 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert J. Pascal can be reached on 571-272-1769. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.


Stephen Jones
Patent Examiner
Art Unit 2817